

Amendments to the Specification

Please replace paragraph [0011] with the following amended paragraph:

[0011] The main board 102 provides power and the communication signals to the cable 106 via an energy barrier ~~(not shown)~~ 107. A communications unit 108 on the main board 102 produces the communication signals in accordance with a predetermined communications protocol (e.g. RS232, RS485, or a synchronous protocol). The communications unit 108 may be a field-programmable gate array (FPGA) that is customized to configure the operation of the remote board 104 and to gather sensor data from the remote board. The sensor data may then be communicated to control electronics (not shown) on the main board 102. The bulk of the data processing and storage may be performed by main board 102, where providing the necessary complexity is significantly less expensive.

Please replace paragraph [0033] with the following amended paragraph:

[0033] For example, when used in accordance with the method of U.S. Patent No. 5,983,730, the isolated environment where main board 102 resides may comprise a computer located in a control room or off-site (e.g., in a laboratory). The hazardous environment where remote board 104 resides may comprise a flow meter housing attached to a pipeline. The remote board 104 may be coupled to transducers 117 to emit ultrasonic impulses (or other forms of measurement energy) into a fluid flow 119 and sensors 121 to measure characteristics of or responses to the ultrasonic impulses. The PLD 110 may systematically trigger the transducers in a programmable fashion and gather the resulting sensor data. The sensor data may then be processed and stored for retrieval by main board 102. For complex processing and/or communications protocols, additional PLDs may be incorporated onto remote board 104 to provide additional programmable computing power.